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EXAMINER

CHEN, TE Y

ART UNIT	PAPER NUMBER
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2161

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,003

Applicant(s)

PATEL ET AL.

Examiner

Susan Y. Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-12 and 43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12, 43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

This action is responsive to the amendment filed on 06/27/2005, in which claims 1-12 and 43 are pending for examination; claim 6 has been amended.

Applicant is reminded to change a typing error of the instant amendment at page 5, line 3, wherein, the canceled Claims "13-20 and 44-48" should be change to "13-42 and 44-58".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 1, it is unclear what the claimed "a first program module" and "a second program module" referred to [i.e., the instant specification discloses at least the following modules: 1) Block Allocation Manager Module, 2) Block Cache Module, 3) Local Block Manager Module, and 4) Remote Block Manager Module, which one is the claimed first and second module? How to associate the claimed first, second modules with the respectively claimed functions? What are the links between the claimed first,

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second modules, file metadata, and error correction data? How can the claimed first programs dynamically select the claimed at least four storage modules for storing the claimed first error correction data or update the metadata on which the claimed first file portion, second file portion and the first error correction data are stored?].

As to claim 2, it is unclear what the claimed third program module referred to? Furthermore, this claim depends on claim 1 that discloses a dynamic selection and storing steps, however, the instant claim recited the use of the claimed third program module configured to instruct the set of storage modules to store the first file portion on the first storage module, the second file portion on the second storage module, the metadata on the third storage module and the first error correction data on the fourth storage module in a static way without any purpose or reason specified in the disclosure, thus it renders the claim as indistinct.

As to claim 4, it is not understood what is meant by "the metadata further indicates the location information" [i.e., what is the claimed location information for?]

As to claim 6, it is unclear what the association of the claimed " a fifth storage module", " the first program module" and "the second program module" is [i.e., How the first program refers to the fifth storage module from the set of storage modules to store a copy of the first file portion in it? What is the scope of the claimed first program and

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second program modules? In where the instant specification defines the scope of the claimed program modules?]

As to claim 7, what is the link between the claimed "a third program module" and "a third program module" as recited in claim 3 [i.e., Do they refer to the same module? Or different modules?]

As to claims 3, 5, 6, 8-12 and 43, these claims have the same defects as their base claim, hence are rejected for the same reason.

Because of the ambiguous nature of the claims, the following art rejection is to the best as the examiner is able to ascertain.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-10 and 43, are rejected under 35 U.S.C. 102(b) as being anticipated by Belsan et al. (U.S. Patent No. 5,403,639).

As to claim 1, Belsan et al. (hereinafter referred as Belsan) discloses a distributed file system [e.g., Abstract, Fig. 1 and associated texts], comprising:

A plurality of storage modules [e.g., the set of storage units: 11-1 – 11-N, Fig. 1] in communication with each other and configured to store and manage metadata [e.g., the metadata files of the storage units 11-1 – 11-N, Fig. 1] about files / directories of the system [e.g., col. 5, lines 2-11], wherein, the data of the at least one of the files stored on the distributed file system span over a plurality of storage modules of the intelligent storage devices, and the first file portion is different from the second file portion [e.g., col. 3, lines 16-19; col. 9, lines 36 – col. 10, line 11].

A first program module stored in the distributed file system and in communication with the set of storage modules configure to dynamically select from the plurality of modules to store the set of file portions on various storage devious modules [e.g., the file server utility software coupled to the user program 3 to dynamically identify the physical location of the different storage modules for storing data via pointers, col. 4, lines 30 – col. 5, line 54; Fig. 19 and associated texts] base on the available capacity [e.g., the step 2007, Fig. 20 and associated texts];

A second program module stored in the distributed file system and in communication with the set of storage modules configure to dynamically update the metadata associated with the various file portion and error correction data [e.g., the function software of the processor 204-0, col. 11, lines 36-49].

As to claim 2, except the features recited in claim 1, Belsan further discloses that the distributed file system having a third program module stored and configured to instruct the set of storage module to stored the various file portions, metadata, and error correction data on various storage module [e.g., the cache management software, col. 21, lines 18-21; col. 23, lines 19-54].

As to claim 5, except the features as recited in claim 1, Belsan further discloses that the file system is configured to change error correction redundancy parameters of a directory when the directory corresponding metadata is updated [e.g., see the steps 624, 625 of Fig. 6; 1005 -1020, Fig. 10; 709-713, Fig. 13; 1504-1506, Fig. 15].

As to claims 6 and 8, except the features recited in claim 5, Belsan further discloses that the file system is configured to copy and replicate data in real-time throughout a subset of the plurality of intelligent storage devices and store the locations of the copied directory data in the corresponding metadata [e.g., see col. 3, lines 11-36; the Snapshot Copy Operation Using Copy Table at col. 21-22].

As to claim 7, except the features recited in claim 1, Belsan further discloses that the system is configured to move data in real-time, wherein the location of the moved data is stored with the associated metadata [e.g., see col. 22, lines 23-47].

As to claims 9-10, except the features recited in claim 8, Belsan further discloses that the system is configured to replicate data in response to a high volume of requests and high utilization of the storage hardware [e.g. see the Staging and De-staging processing at col. 24 – col. 26 & Fig. 18].

As to claim 43, the claimed feature the file has been stored on a number of storage modules, wherein the number is equal to or greater than two is an intended use of distributing file processing.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4, are rejected under 35 U.S.C. 103(a) as being unpatentable over Belsan et al. (U.S. Patent No. 5,403,639) in view of Beardsley et al. (U.S. Patent No. 6,502,174).

As to claims 3-4, Belsan discloses all of the features recited in claims 1 and 2, however, Belsan fails to expressly disclose the redundancy information including parity data stored with corresponding metadata in form of block location.

However, Beardsley disclosed a storage management system having the redundancy information includes claimed parity information in form of data block address as claimed by applicant [col. 4, lines 58 – col. 5, line 27; Fig. 2 and associated texts].

Belsan and Beardsley are common in the field to manage storage data via common metadata structure, therefore, with both Beardsley and Beardsley teachings in front of him/her, it would have been obvious for an ordinary skilled person in the art at the time the invention was made to be motivated to modify Belsan's system with the metadata structure taught by Beardsley, because by doing so, the combined system would be able to apply the segmented parity information stored in the metadata structure to perform associated storage segment validation or error checking, therefore, result in a faster storage block data recovery in case of system malfunction.

Claim Rejections - 35 USC § 103 (Continue)

Claims 11-12, are rejected under 35 U.S.C. 103(a) as being unpatentable over the system of Belsan as applied to claim 1 above, and further in view of Mason, Jr. (U.S. Patent No. 5,884, 098).

As to claims 11 -12, the system of Belsan did not expressly disclosed the claimed read/write features cited by applicant. However, Mason Jr. (hereinafter referred as Mason) teaches that the claimed features are the general options of the popular

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storage technology RAID Level 5 processing [e.g. see col. 8, lines 29-32]. Belsan and Mason are in the same field to process input/out data via intelligent storage units. As such, it would have been obvious to one of ordinary skilled person in the art at the time the invention was made, to adapt the very popular RAID processing into Belsan's system, because by applying the existing technique of RAID level 5 processing as taught by Mason into the system of Belsan, the system would provide a handy read-modify-write operations for storage data block I/O processing.

Response to Arguments

Applicant's arguments filed on 06/27/2005 have been fully considered but they are not persuasive.

Applicant states on page 5, "As to Claim 1, the examiner states that "it is unclear what the claimed 'a first program module' and 'a second program module' referred to [i.e., the instant specification discloses at least the following: 1) block Allocation Manager module, 2) Block Cache Module, 3) Local Block Manager Module, and 4) Remote Block Manager Module, which one is the claimed first and second module?" In response, Applicants respectfully remind the Examiner that the specific embodiments described in the drawings and the specification of the above-referenced application are set forth to illustrate, and not to limit, the invention. One skilled in the art will recognized that the first program module and the second program module are clearly pointed out and distinctly claimed with respect to their respective programming configurations as set

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forth in Claim 1. While one or more of the modules described in the specification perform the claimed configurations, the first program module and the second program modules in Claim 1 are not limited to any specific embodiment.” Examiner is not persuaded.

Examiner counters by pointing out that MPEP Section 2106 recited:

“Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). As recognized by the Applicant, the claimed first program and the second program modules in Claim 1 are not limited to any specific embodiment, which results in the scope of the claimed the first and second program modules to be ambiguous and undeterminable, thus, it renders the claimed subject matters to be unclear and indistinct.

As to the rest arguments against 35 U.S.C. 112 § second paragraph rejection, that have the same type of defects as addressed for claim 1, hence are not persuasive.

The examiner further disagrees with applicant arguments against 35 U.S.C. § 102(b) rejection that “the data storage devices 11-1 – 11-n cannot be “a set of at least four storage modules in communication with each other,” as recited, among other things, by Claim 1.”

In reply to this argument, the examiner points out that the data storage unit 11-1 to 11-n disclosed by Belsan read on the claimed “a set of at least four storage modules.” Belsan further disclosed that the data of the at least one of the files stored on the

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distributed file system span over a plurality of storage modules of the intelligent data storage devices, and the first file portion is different from the second file portion [e.g., col. 3, lines 16-19; col. 9, lines 36 – col. 10, line 11]. In addition, Belsan discloses those storage units are under the control of a host data processor [e.g., Fig. 1, unit 2] and a file server system [e.g., Fig. 1, unit 1] to communicate with each other [e.g., col. 5, lines 24 – 54; Fig. 19 and associated texts]. Thus, in contrary to applicant arguments, Belsan disclosed the claimed features.

As to the rest of arguments, Applicant either argued based upon the ambiguous claimed first and second program modules or newly amended features, as such, the examiner is not persuaded.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Y Chen whose telephone number is 571-272-4016. The examiner can normally be reached on Monday - Friday from 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan Y Chen
Examiner
Art Unit 2161

September 6, 2005



UYEN LE
PRIMARY EXAMINER